Appendix K – Summary of Investigations

Data Summary Table

Summary of Investigations
Tolend Road
Dover, NH
Station 101+25 to Station 265+50
December 7, 2015

The following information provided in Table 1 is a summary of Project Information reported in 2014:

Table 1: Pavement core data taken during the summer of 2014 (CMA).

Parameter	Min	Max	Average	Spec
Thickness	2.9"	4.0"	3.3"	3.5"
Compaction	93.0%	97.2%	95.0%	92%
Percent Fines	3.5%	5.0%	4.2%	3.4% +/- 1%
Asphalt Content	4.6%	4.9%	4.7%	4.7% +/- 0.4%

The following information provided in Tables 2, 3 and 4 is a summary of Peer Review information:

Table 2. Pavement Cores and Test Pits Completed by UE (October 2014).

ID No.	Method	Phase	Approx STA.	Offset	Pavement Thickness
B1core	Pavement Core	IIA	117+30	9'RT	3.3"
TP#1	Test Pit	IIA	128+35	13'RT	Table 3
B2core	Pavement Core	IIA	128+45	8.5'RT	3.0"
B3core	Pavement Core	I	152+96	C.L.	2.8"
B4core	Pavement Core	IIIA	159+50	3'RT	2.4"
TP#2	Test Pit	IIIA	159+80	15.5'RT	Table 3
B5core	Pavement Core	IIIA	164+12	C.L.	2.9"
B6core	Pavement Core	IIIA	164+12	9'RT	3.3"
B8core	Pavement Core	IV	190+22	9'LT	3.9"
TP#3	Test Pit	IV	191+23	13'RT	Table 3
B7core	Pavement Core	VII	191+29	7'RT	2.6"
B9core	Pavement Core	VI	228+60	C.L.	2.8"

Table 3. Test Pit Data from UE tests pits (October 6, 2014).

	Test Pit #1 STA 128+35	Test Pit #2 STA 159+80	Test Pit #3 STA 191+23	Spec
Phase	IIa	IIIa	IV	
Pavement Thickness (see note)	3"	3"	3"	3.5"
Gravel Top Layer				
Thickness	12"	9"	16"	12"
Gradation (see note)	Pass	Fail	Fail	(304.4)
Gravel Bottom Layer				
Thickness	11"	11"	0"	12"
Gradation (see note)	Pass	Fail	N/A	(304.5)
Water Observed	None	None	None	

Note: The pavement thickness was measured at the edge and may not be representative. With one exception, the failures of gradation were due to excessive fines passing the #200 sieve. The specification was 5.0 and the samples ranged from 5.8 to 6.8.

Table 4. Boring and Test Pit Data summaries (October 2014).

Phase	HMA (Measured)		HMA	Gravel	
	Average Thick (in)	Range	Calculated Thick (in)	Average Thick (+/- 2")	Range
IIB	4.0	One sample	4.0	26.0	One sample
IIA	3.5	3.0 to 4.0	3.3	23.7	18.0 to 28.0
I	3.5	2.8 to 4.5	3.5	22.0	21.0 to 24.0
IIIA	3.1	2.4 to 3.5	3.2	22.4	20.0 to 24.0
IIIB	No samples		3.8	No samples	
IV	3.6	3.5 to 3.9	3.6	19.3	16.0 to 21.0
VII	3.2	2.6 to 3.5	3.4	22.3	21.0 to 24.0
V	4.0	4.0 to 4.0	3.5	20.0	18.0 to 22.0
VI	3.6	2.8 to 4.0	3.4	23.3	20.0 to 26.0
VIII	4.0	4.0 to 4.0	3.4	12.5	9.0 to 16.0

Note: The core taken at 101+80 (B-1) was not included because it appears to be located in Barrington. Pavement thicknesses from the test pits were neglected because they were measured at the edge and not considered representative.

The following information is a tabulation of all data:

SEGMENT							PROJECT DATA (2013-2014)					PEER REVIEW DATA (2014)										
							Pavement					Pavement						Gravel				
Phase	Length	Tons	Date	Station	Offset	Sample ID	Compaction (%)	Thickness (inch)	Fines (%)	% AC	Notes/Source	Thickness (inch)	Performance Grade (PG)	200 Sieve (% Passing)	% AC	% Air	Notes/Source	Sub-Base (inches)	Base (inches)	Total (inches)	304.5 (P/F)	304.4 (P/F)	Notes/Source
IIB	600	358	10/27/14	101+80	EB	B-1						2.5					SWCole, B-1			6			SWCole, B-1
IIB			6/20/13	104+50	1' L	JTC 1	95.2	3.77			JTC 1												
IIB			6/20/13	104+50	1' R	JTC 2	95.4	3.12			JTC 2												
IIB			10/27/14	106+70	WB	B-31						4.0					SWCole, B-31			26			SWCole, B-31
IIA	2,975	1,480	10/27/14	110+70	EB	B-2						3.0					SWCole, B-2			18			SWCole, B-2
IIA			10/27/14	116+70	WB	B-30						4.0					SWCole, B-30			26			SWCole, B-30
IIA			10/3/14	117+30	9' R	UE-B1Core						3.3					UE-B1Core						
IIA			10/27/14	121+90	EB	B-3						3.0					SWCole, B-3			20			SWCole, B-3
IIA			10/27/14	126+70	WB	B-29						4.0					SWCole, B-29			27			SWCole, B-29
IIA			10/6/14	128+35	13' R	UE-TP#1						3					UE-TP#1	11	12	23	Pass	Pass	UE-TP#1
IIA			10/3/14	128+45	8.5' R	UE-B2Core						3					UE-B2Core						
IIA			10/27/14	132+00	EB	B-4						3.5					SWCole, B-4			24			SWCole, B-4
IIA			6/19/13	135+85	2.5' R	JTC 3	93.3		4.9	4.73	JTC 3												
IIA			10/27/14	136+70	WB	B-28						4.0					SWCole, B-28			28			SWCole, B-28
I	1,700	1,028	10/27/14	141+30	EB	B-5						3.5					SWCole, B-5			21			SWCole, B-5
I			5/9/13	143+75	3' R	Brox 1	95	3.2			Brox 1												
I			10/27/14	146+80	WB	B-27						4.5					SWCole, B-27			24			SWCole, B-27
I			5/9/13	148+25	7' L	Brox 2	94.4	3.5			Brox 2												
I			10/27/14	151+70	EB	B-6						3.0					SWCole, B-6			21			SWCole, B-6
I			10/6/14	152+96	CL	UE-B3Core						2.8					UE-B3Core						

SEGMENT							PROJECT DATA (2013-2014)					PEER REVIEW DATA (2014)											
							Pavement					Pavement						Gravel					
Phase	Length	Tons	Date	Station	Offset	Sample ID	Compaction (%)	Thickness (inch)	Fines (%)	% AC	Notes/Source	Thickness (inch)	Performance Grade (PG)	200 Sieve (% Passing)	% AC	% Air	Notes/Source	Sub-Base (inches)	Base (inches)	Total (inches)	304.5 (P/F)	304.4 (P/F)	Notes/Source
IIIA	1,875	1,030	7/18/13	155+83	WB	JTC 4	96.2	3.4	4.0	4.7	JTC 4												
IIIA			7/18/13	155+83	WB	Cardno 1	96.1	3.38	4.8	5.2	Cardno 1												
IIIA			10/27/14	156+70	WB	B-26						3.5					SWCole, B-26			23			SWCole, B-26
IIIA			10/3/14	159+50	3' R	UE-B4Core						2.4					UE-B4Core						
IIIA			10/6/14	159+80	15.5' R	UE-TP#2						3					UE-TP#2	11	9	20	Fail	Fail	UE-TP#2
IIIA			7/18/13	160+08	WB	JTC 10	97.2	3.1	5	4.8	JTC 10												
IIIA			7/18/13	160+08	WB	Cardno 2	98.1	3	2.6	5	Cardno 2												
IIIA			10/27/14	161+70	EB	B-7						3.0					SWCole, B-7			24			SWCole, B-7
IIIA			7/18/13	164+00	CL	JTC 5		3.11			JTC 5												
IIIA			7/18/13	164+00	1' R	JTC 6	93.8	3.56			JTC 6												
IIIA			7/18/13	164+00	1.5' L	JTC 7	93.8	2.88			JTC 7												
IIIA			7/18/13	164+00	8' L	JTC 8	96.7	2.95			JTC 8												
IIIA			7/18/13	164+00	3' L	JTC 9		2.92			JTC 9												
IIIA			10/3/14	164+12	CL	UE-B5Core						2.9	82-22	6.0	4.51	11.3	UE-B5Core, AAT						
IIIA			10/3/14	164+12	9' R	UE-B6Core						3.3					UE-B6Core						
IIIA			7/18/13	166+21	WB	JTC 11	95.5	2.95	4.0	4.61	JTC 11												
IIIA			7/18/13	166+21	WB	Cardno 3	95.3	2.88	4.5	5.10	Cardno 3												
IIIA			10/27/14	166+80	WB	B-25						3.5					SWCole, B-25			24			SWCole, B-25
IIIA			7/18/13	170+61	EB	JTC 12	94.9	3.2	4.2	4.58	JTC 12												
IIIA			7/18/13	170+61	EB	Cardno 4	95.3	3.13	4.2	5.30	Cardno 4												
IIIA			10/27/14	171+80	EB	B-8						3.0					SWCole, B-8			21			SWCole, B-8
IIIB	825	551	7/19/13	180+67	WB	JTC 13	95.9	3.95	4.6	4.58	JTC 13												
IIIB			7/19/13	180+67	WB	Cardno 5	95.5	3.88	4.9	5.10	Cardno 5												
IV	1,050	664	10/27/14	181+80	EB	B-9						3.5					SWCole, B-9			21			SWCole, B-9
IV			8/6/13	184+00	7' R	JTC 14	95.7		3.5	4.91	JTC 14												
IV			10/27/14	186+80	WB	B-24						3.5					SWCole, B-24			21			SWCole, B-24
IV			10/3/14	190+22	9' L	UE-B8Core						3.9	76-22	6.1	4.52	4.8	UE-B8Core, AAT						
IV			10/6/14	191+23	13' R	UE-TP#3						3					UE-TP#3	0	16	16	N/A	Fail	UE-TP#3
VII	1,850	1,111	10/3/14	191+29	7' R	UE-B7Core						2.6					UE-B7Core						
VII			10/27/14	191+80	EB	B-10						3.0					SWCole, B-10			21			SWCole, B-10
VII			10/27/14	201+80	EB	B-11						3.5					SWCole, B-11			22			SWCole, B-11
VII			10/27/14	206+80	WB	B-23						3.5					SWCole, B-23			24			SWCole, B-23
VII			10/17/13	208+00	6' R	JTC 15	95.3	3.51			JTC 15												
VII			10/17/13	208+00	6' L	JTC 16	94.4	3.30			JTC 16												
V	1,750	1,082	10/27/14	211+80	EB	B-12						4					SWCole, B-12			20			SWCole, B-12
V			10/27/14	216+80	WB	B-22						4					SWCole, B-22			18			SWCole, B-22
V			10/27/14	221+80	EB	B-13						4					SWCole, B-13			22			SWCole, B-13
VI	2,050	1,207	10/3/14	228+60	CL	UE-B9Core						2.8					UE-B9Core						
VI			10/27/14	231+80	EB	B-14						3.5					SWCole, B-14			23			SWCole, B-14
VI			10/27/14	236+80	WB	B-21						4					SWCole, B-21			24			SWCole, B-21
VI			10/27/14	241+80	EB	B-15						3.5					SWCole, B-15			20			SWCole, B-15
VI			10/27/14	246+80	WB	B-20						4					SWCole, B-20			26			SWCole, B-20
VIII	1,750	1,045	11/6/13	248+75	3.5' L	JTC 17	93.0		3.5	4.61	JTC 17												
VIII			10/27/14	251+80	EB	B-16						4					SWCole, B-16			9			SWCole, B-16
VIII			10/27/14	256+60	WB	B-19						4					SWCole, B-19			16			SWCole, B-19
VIII			10/27/14	261+80	EB	B-17						4					SWCole, B-17			13			SWCole, B-17
VIII			10/27/14	264+40	WB	B-18						4					SWCole, B-18			12			SWCole, B-18
						Average	95.3	3.3	4.2	4.9		3.4						7.3	12.3	20.7			

Notes:
1. AAT - Advanced Asphalt Technologies, LLC.
2. The 6" gravel at Station 101+80 was neglected because it is not in the "box-out" section.